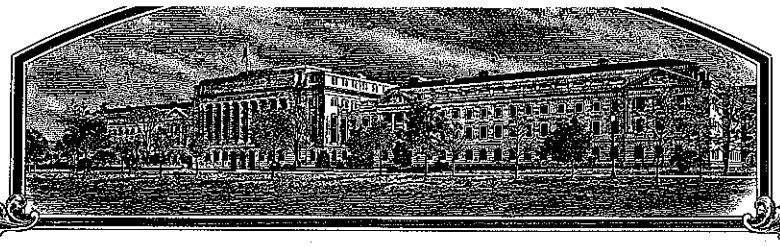
200200121

No.



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Cornell University

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

POTATO

'Marcy'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this seventh day of February, in the year two thousand and eight.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

BUREAU OF ENGRAVING AND PRINTING

REPRODUCE LOCALLY. *Include form number and date on all reproductions*

Form Approved - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER
Cornell University
Per letter 3-13-2007 LMC 3-28-2007

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
NY112 = B7 - 19

3. VARIETY NAME
'Marcy'

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
New York Agricultural Experiment Station
Cornell University - Plant Breeding Dept.
Ithaca, NY 14853-1901

5. TELEPHONE *(Include area code)*
(607)255-2180

6. FAX *(include area code)*
(607)255-6683

FOR OFFICIAL USE ONLY

PVPO NUMBER
200200121

FILING DATE
03/20/2002

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*

8. IF INCORPORATED, GIVE STATE OF INCORPORATION

9. DATE OF INCORPORATION

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*

Walter S. DeJong
Dept. of Plant Breeding
Cornell University
Ithaca, NY 14853-1901

Robert L. Plaisted
Dept. of Plant Breeding
Cornell University
Ithaca, NY 14853-1901

FEES RECEIVED

FILING AND EXAMINATION FEES:
$ 2705.00
DATE 03/20/2002

CERTIFICATION FEE:
$ 768.00
DATE 9/24/07

11. TELEPHONE *(Include area code)*
(607)255-4962

12. FAX *(Include area code)*
(607)255-6344

13. E-MAIL
wsd2@cornell.edu

14. CROP KIND *(Common Name)*
Potato

15. GENUS AND SPECIES NAME OF CROP
Solanum tuberosum

16. FAMILY NAME *(Botanical)*
Solanaceae

17. IS THE VARIETY A FIRST GENERATION HYBRID?
☐ YES ☐ NO

18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)

a. ☒ Exhibit A. Origin and Breeding History of the Variety
b. ☒ Exhibit B. Statement of Distinctness
c. ☒ Exhibit C. Objective Description of Variety
d. ☐ Exhibit D. Additional Description of the Variety *(Optional)*
e. ☒ Exhibit E. Statement of the Basis of the Owner's Ownership
f. ☒ Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
g. ☒ Filing and Examination Fee ($2,705), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *See Section 83(a) of the Plant Variety Protection Act)*
☐ YES *(If "yes", answer items 20 and 21 below)* ☒ NO *(If "no", go to item 22)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? ☐ YES ☐ NO
IF YES, WHICH CLASSES? ☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? ☐ YES ☐ NO
IF YES, SPECIFY THE NUMBER 1,2,3, *etc.* ☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED
(If additional explanation is necessary, please use the space indicated on the reverse.)

22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?
☒ YES ☐ NO
IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?
☐ YES ☒ NO
IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER
Robert L. Plaisted

NAME *(Please print or type)*
Robert L. Plaisted

CAPACITY OR TITLE
Professor Emeritus

DATE
6 Mar 2002

SIGNATURE OF OWNER
Walter L. DeJong

NAME *(Please print or type)*
Walter S. DeJong

CAPACITY OR TITLE
Assistant Professor

DATE
06 March 2002

20020012

INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties verification that a viable *(in the sense that it will reproduce an entire plant)* tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for $2,705 ($320 filing fee and $2,385 examination fee), payable to "Treasurer of the United States" *(See Section 97.6 of the Regulations and Rules of Practice.)* Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfiled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of $320 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office
Telephone: (301) 504-5518
FAX: (301) 504-5291
Homepage: http://www.ams.usda.gov/science/pvpo/pvp.htm

ITEM

18a. Give:
(1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified

18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:

(1) identify these varieties and state all differences objectively;
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.

18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.

18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, *etc.*

18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.

19. If "Yes" is specified *(seed of this variety be sold by variety name only, as a class of certified seed)*, the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. *(See Regulations and Rules of Practice, Section 97.103).*

22. *See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.*

23. *See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.*

21. CONTINUED FROM FRONT *(Please provide a statement as to the limitation and sequence of generations that may be certified.)*

22. CONTINUED FROM FRONT *(Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)*

Seed first sold on 28 April 2001 to Mr. Leo Karlhein, 534 Ott Road, Patton PA, USA

23. CONTINUED FROM FRONT *(Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)*

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. *(See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)*

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center--East, Beltsville, MD 20705. Telephone: (301) 504-8089. http://www.ams.usda.gov/lsg/seed/ls-sd.htm

S&T-470 (04-01) designed by the Plant Variety Protection Office with WordPerfect 6.0a. Replaces STD-470 (02-99) which is obsolete.

Exhibit A. Origin and Breeding History of the Variety.

The potato clone Marcy, also known under experimental designations as NY112 and P7-19, resulted from a cross made in early 1990 between the widely-grown chipping variety "Atlantic" (female parent) and Q155-3 (pollen parent), a Cornell University breeding line. Q155-3 was selected from the cross K349-7 x 6HS-9. K349-7 was selected from the cross D164-3 x C111-21.

Seed from this cross was first sown in 1991. Seedlings were transplanted to styrofoam quadra-packs, then to 6 inch pots and raised in the field on Mount Pleasant, near Ithaca, NY. Four tubers were harvested from each pot and planted as four hill plots in the field in 1992. Selections were made in the field in the fall of 1992 based on visual impressions of appearance and yield. During the winter clones were assayed for resistance to race Ro1 of the golden cyst nematode and only resistant ones were retained. Clones that passed the first round of selection were planted and evaluated as 20 hill plots in 1993. In each successive year evaluation plots increased in size and selection became more intensive, so that progressively fewer and fewer clones were retained. Traits which were evaluated most rigorously were the ability to chip directly from 45°F cold storage, freedom from internal and external physical defects, resistance to scab, resistance to the golden nematode, specific gravity, maturity, and yield.

Marcy was observed in seed multiplication plots for eleven generations in one location (Mount Pleasant, near Ithaca NY), as well as for six years in yield trials at Ellis Hollow and Harford NY, and was determined to be genetically uniform and stable for generation to generation with no evidence of variants.

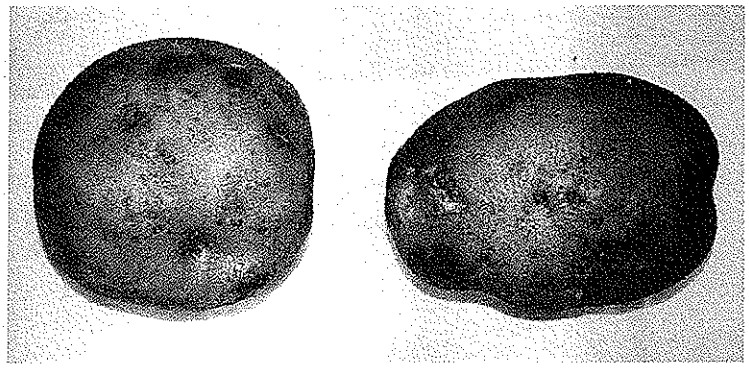
A description of Marcy has been published: American Journal of Potato Research (2006) 83, 189-193.

Exhibit B. Statement of Distinctness.

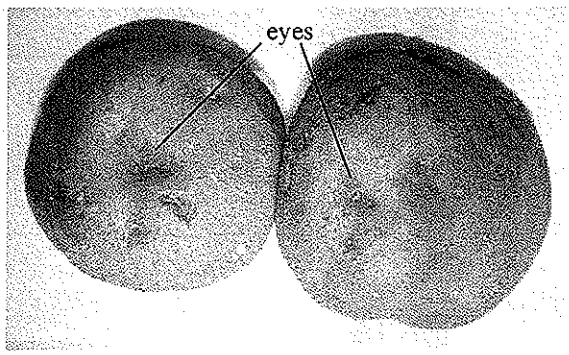
Marcy is a chipping variety, resulting from a cross between the widely grown chipping variety "Atlantic" and Q155-3, a Cornell University breeding line. Q155-3 is no longer extant.

Marcy is most similar to the variety "Atlantic". The easiest way to differentiate them is to observe the flowers; Marcy has white flowers (RHS 155A), while Atlantic has red-violet flowers (RHS 85C). The tubers of Marcy are oval in shape, unlike the round tubers of Atlantic. Tuber eyes are shallower for Marcy than for Atlantic.

Flowers of Atlantic, on the left, are red-violet in color. Flowers of Marcy, on the right, are white.



Tubers of Atlantic (left) tend to be round, while tubers of Marcy (right) tend to be oval.



The eyes of Atlantic tubers (left) tend to be deeper than the eyes of Marcy tubers (right).

Marcy: A Chipping Variety with Resistance to Common Scab and the Golden Nematode

Walter S. De Jong[1]*, Donald E. Halseth[2], Bill B. Brodie[3], Keith L. Perry[3], Joseph B. Sieczka[2], Barbara J. Christ[4], Gregory A. Porter[5], Ken M. Paddock[1], Michael W. Peck[4], and Robert L. Plaisted[1]

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ABSTRACT

'Marcy' is a white-skinned, white-fleshed potato cultivar notable for its high yield, good chip color, and resistance to common scab and race Ro1 of the golden cyst nematode. It was selected from a cross made at Cornell University in 1990 between 'Atlantic' and Q155-3. Full-season marketable yields of Marcy have averaged 15% to 20% greater than Atlantic in 83 trials across New York, Maine, and Pennsylvania. Specific gravity of Marcy has averaged 0.008 less than Atlantic. Chip color out of 7 C storage in New York has been similar to 'Pike', but not as light as 'Snowden'. Marcy tubers have an attractive oval shape, shallow eyes, and highly textured skin. Marcy was jointly released by the New York and Pennsylvania Agricultural Experiment Stations in 2002.

RESUMEN

'Marcy' es un cultivar de papa de piel y pulpa blancas, notable por su alto rendimiento, buen color de hojuelas, resistente a la sarna común y a la raza Ro1 del nematodo dorado del quiste. Fue seleccionado de un cruzamiento entre 'Atlantic' y Q155-3 hecho en la Universidad de Cornell en 1990. En temporada plena, los rendimientos comerciables de Marcy han tenido un promedio de 15-20% más que Atlantic en 83 ensayos en Nueva York, Maine y Pennsylvania. El peso específico de Marcy ha promediado 0.008% menos que Atlantic. El color de las hojuelas fuera del almacenamiento a 7 C en Nueva York, ha sido similar a 'Pike' pero no tan claro como 'Snowden'. Los tubérculos de Marcy tienen una atractiva forma oval, ojos superficiales y piel de excelente textura. Marcy fue liberada por las Estaciones Experimentales de Nueva York y Pennsylvania conjuntamente en el año 2002.

INTRODUCTION

'Marcy' was initially evaluated as P7-19, then as NY112. Marcy is from a cross made at Cornell University in 1990 between 'Atlantic' (female) (Webb et al. 1978) and Q155-3 (male) (Figure 1). Q155-3 was a clone with good chip color, bright skin, and good resistance to common scab, and was itself a selection from a cross made in 1972 between K349-7 and 6HS-9. K349-7 was selected from the cross D164-3 x C111-21. Parents of 6HS-9 were 'Kennebec' (Akeley et al. 1948) and 'Pennchip' (Mills 1963).

The seedling generation was grown in 1991 and four tubers saved from each 15-cm pot. The four-hill plot was grown in 1992, selected on the basis of tuber appearance and resistance to common scab and evaluated later for chip color and resistance to race Ro1 of *Globodera rostochiensis* (golden cyst nematode). In 1993 it was planted in a 24-hill plot and selected again for tuber appearance and scab resistance in the field and later for chip color and specific gravity, as well as re-tested for nematode resistance. In 1994 it was grown in 144 hills, repeating the same selection procedure. It was also

Accepted for publication 24 October 2005.
ADDITIONAL KEY WORDS: *Solanum tuberosum*, *Globodera rostochiensis*

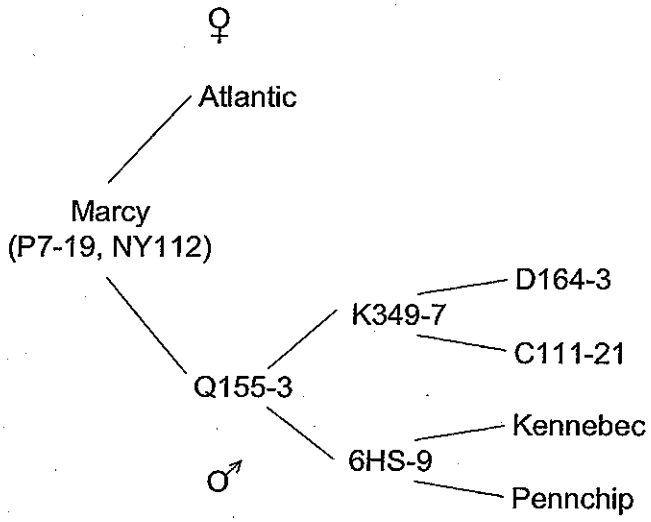

FIGURE 1.
Pedigree of Marcy.

grown in a separate introductory yield trial where its yield, tuber shape, scab resistance, and chip color all scored favorably. In 1995, the seed plot was increased to 400 hills, and it was evaluated in yield trials at Ithaca, Freeville, and Riverhead, NY, and also in Centre County, PA. The next year the yield trials were extended to include three locations in Tompkins County and one each in Steuben and Wyoming counties, NY. In 1997 additional trials were conducted in three PA counties. In 1998, in addition to the five New York and four Pennsylvania trials, it was evaluated for the first year in the Snack Food Association trials at seven locations. In 1999, the locations were expanded to include three locations in Maine as well as the Northeastern regional trials, which evaluate at sites in Maine, New Jersey, Virginia, North Carolina, Florida, Ohio, New York, and Pennsylvania. All these trials were repeated in

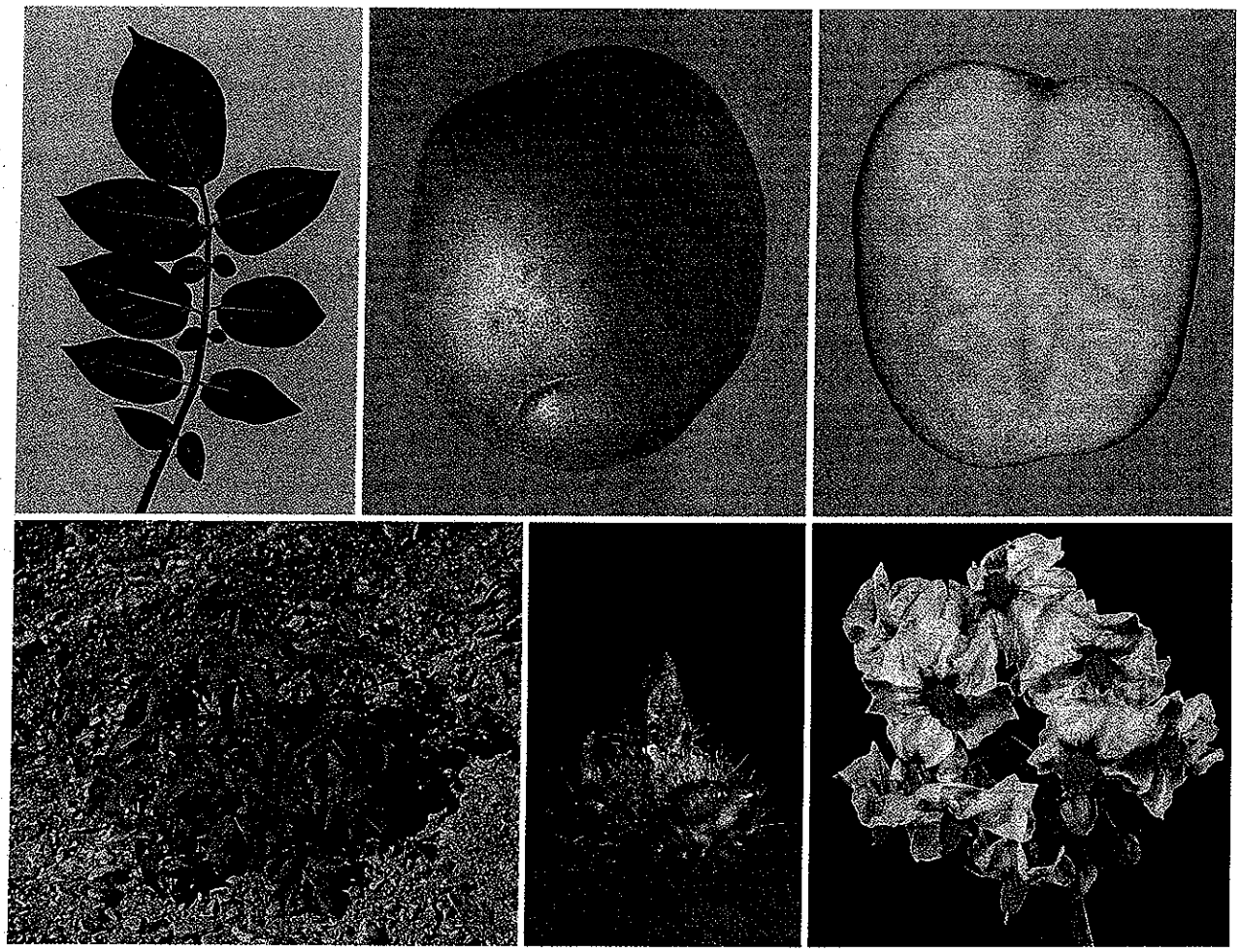

FIGURE 2.
Leaf, tuber, plant, sprout, and flower characteristics of Marcy.

6

2000 and 2001. Trials continued in New York and Pennsylvania in 2002 and 2003.

Marcy was introduced into *in vitro* culture in March 1996. In December of the same year, disease-free plantlets were sent to the Uihlein Foundation Seed Farm at Lake Placid, NY. The first seed was distributed in the spring of 1999. In 2000, 2.9 acres of foundation seed were produced in New York, which increased to 22 acres in 2001, 48 acres in 2002, 45 acres in 2003, and 61 acres in 2004. In Maine, 0.8 acres of foundation seed were produced in 2001, which increased to 7 acres in 2002, 46 acres in 2003, and 108 acres in 2004. It was officially released to the Potato Foundation Seed Committee of the New York Seed Improvement Cooperation, Inc., in February 2002.

Marcy was named after Mount Marcy, the highest peak in New York State. This mountain is visible from the Uihlein Foundation Seed Farm at Lake Placid.

DESCRIPTION

Leaf, tuber, plant, sprout, and flower characteristics of Marcy are shown in Figure 2.

Plants

Growth habit: large vines, semi-erect with full-season maturity. Maturity is similar to or slightly later than Atlantic. It matures about125 days after planting under northeastern U.S. growing conditions. *Stems*: anthocyanin absent, strong wings. *Leaves*: dark green (Royal Horticultural Society Color Chart value 141A), medium length and sparse pubescence; open leaf silhouette; petiole anthocyanins absent; small leaf stipules. *Terminal leaflets*: medium-ovate shape with acuminate tip and cordate base, no leaflet margin waviness. *Primary leaflets*: large size, average of 3.8 pairs per leaf with elliptical shape, acuminate tip and cordate base. *Secondary and tertiary leaflets*: average of 6.6 pairs.

Flowers

Inflorescences: abundant, white flowers averaging 12 florets per inflorescence and six inflorescences per plant. *Corolla*: pentagonal shape, white on both surfaces (RHS Color Chart value 155A). *Calyx*: anthocyanin coloration absent. *Anthers*: broad cone shape, yellow-orange color (RHS Color Chart value 17A). *Stigma*: capitate shape and yellow-green color (RHS Color Chart value 152A). *Fertility*: poor male but good female fertility. No berry production in the field.

Tubers

Tuber size and shape: oval, slightly flattened and typically medium to large-sized. The mean length of tubers grown in upstate New York without irrigation during 2001 was 6.3 cm ± 1.3, mean width was 5.5 cm ± 1.2, and mean thickness was 4.7 cm ± 0.8. *Skin*: brown (RHS Color Chart 164B) and highly textured. *Eyes*: shallow; eyebrows not prominent; average of nine eyes per tuber, predominately at the apical end. *Flesh*: white (RHS Color Chart value 158B).

CHARACTERISTICS

This clone was evaluated for chip color every year from 1992 through 2003 inclusive. Initial chipping tests were conducted only in New York; however, many states and locations were included in the evaluation program from 1997 onward. The Tompkins County trials were stored at 7 C and chipped in December, January, and February one or two days after removal from storage. Table 1 presents a summary of the visual chip color rating for 4 years (1998-2001). The visual ratings for Marcy chips indicated they were lighter in color than 'Pike', but darker than 'Snowden'. All three chipped lighter than Atlantic. Pennsylvania trials were chipped in November from 13 C storage; results from five crop years are given in Table 2. The visual score of Marcy was intermediate to Atlantic and Snowden. In Maine trials over 3 years (1999-2001) potatoes were chipped in March out of 7 C storage. Average Agtron scores in Maine were 66 for Marcy, 61 for Atlantic, and 65 for Snowden. Agtron scores above 60 were considered acceptable.

TABLE 1—*Chip color in New York trials from 7 C storage with no reconditioning. Samples are from Ellis Hollow and Harford trials and were chipped in December, January, and February and averaged for 4 crop years (1998-2001).*

Variety	Visual Score*
Marcy	3.2
Atlantic	5.2
Pike	3.5
Reba	3.8
Snowden	2.6

*Scored on a scale of 1 to 9, where lower values indicate lighter color. Scores of 1 to 3 are considered good, 4 is marginal, and 5 through 9 are unacceptable.

TABLE 2—*Chip color in Pennsylvania trials from 13 C storage with no reconditioning. Samples were chipped from Lancaster, Somerset, Erie, and Centre counties each November for 5 crop years (1997-2001).*

Variety	Visual Score
Marcy	3.8
Atlantic	4.1
Snowden	3.2

The specific gravity of Marcy is about 0.008 below Atlantic (Table 3). The actual value depends on the location and season. In Steuben and Wyoming counties, the specific gravity has averaged 1.086, while in Tompkins County, it has averaged 1.080. The difference of about 0.008 from Atlantic has been consistent over a wide range of locations and seasons (Table 3).

Yield of Marcy has been outstanding. In 46 trials in New York over 8 years, the full season marketable yield of Marcy has averaged 119% of Atlantic (Table 4). In 28 trials in Pennsylvania over 6 years marketable yield was 120% of Atlantic, while in nine trials in Maine over 3 years yield was 115% of Atlantic (Table 4). Although its vines mature late (intermediate to Atlantic and Snowden), Marcy tubers set and begin to size relatively early. At 90 days after planting the yield of Marcy is comparable to both Superior and Atlantic (Table 5). Yield continues to improve until the vines mature approximately 120 days after planting. In New York trials it appears that the yield advantage of Marcy is a product of both tuber set and average tuber size (Table 6). At three locations over 7 years in trials planted at 18- to 23-cm spacing, Marcy set more tubers (8.5 per 30 cm of row) than Atlantic (8.0), but fewer than Snowden (10.4), while the average tuber weight (177 g) was higher than both Atlantic (167 g) and Snowden (133 g). In-row spacing no greater than 18 cm is recommended for optimum yield and size.

Marcy has exhibited relatively few internal defects in the Northeast. Over 67 trials in New York and Pennsylvania (Table 7), Marcy averaged 6.8% hollow heart in tubers in the 8- to 10-cm size, compared to 14.6% for Atlantic. In northern Maine over 3 years, Marcy had no hollow heart compared to 7.5% for Atlantic. In the 67 New York and Pennsylvania trials, Marcy averaged 1.5% internal necrosis compared to 6.8% for Atlantic. In areas where internal necrosis in Atlantic can be a problem, such as Long Island, New Jersey, and North Carolina, internal necrosis is apt to occur, but still at a frequency less than Atlantic.

TABLE 3—*Specific gravity of Marcy compared to Atlantic in New York, Pennsylvania, and Maine.*

State	Location	No. of years	Marcy Specific Gravity	Difference vs Atlantic
New York	Ellis Hollow	11	1.077	(-0.007)
	Harford	8	1.081	(-0.007)
	Freeville	9	1.083	(-0.008)
	Steuben	8	1.087	(-0.006)
	Wyoming	8	1.084	(-0.008)
Pennsylvania	Rock Springs	7	1.082	(-0.008)
	Lancaster	7	1.073	(-0.012)
	Somerset	7	1.077	(-0.010)
	Erie	7	1.073	(-0.008)
Maine	Presque Isle	3	1.089	(-0.003)
	Exeter	3	1.087	(-0.008)
	St. Agatha	3	1.090	(-0.006)
Average difference				(-0.008)

TABLE 4—*Full season marketable yield* of Marcy (Mg ha^{-1}) in New York, Pennsylvania, and Maine.*

Year	New York	Pennsylvania	Maine
1996	51.3 (5, 128)**		
1997	57.4 (6, 117)		
1998	54.2 (5, 117)	46.2 (8, 134)	
1999	55.1 (5, 117)	47.7 (4, 108)	44.4 (3, 107)
2000	50.9 (6, 113)	55.5 (4, 108)	39.5 (3, 127)
2001	60.0 (6, 129)	46.4 (4, 126)	40.5 (3, 113)
2002	46.3 (6, 127)	28.8 (4, 125)	
2003	46.0 (7, 111)	31.1 (4, 119)	
Average	52.4 (46, 119)	43.1 (28, 120)	41.5 (9, 115)

*Marketable yield comprises tubers greater than 4.75 cm in diameter and free of external defects.

**(Number of trial locations, yield relative to Atlantic in percent)

TABLE 5—*Marketable yield of Marcy in the last week of July* at Ithaca, NY.*

Year	Yield (Mg ha^{-1})	Yield relative to check variety (%)	
		Superior	Atlantic
1996	31.6	111	NT
1997	26.0	101	95
1998	40.2	98	99
1999	37.9	94	106
2000	29.9	107	109
2001	36.5	95	90
Average	33.7	100	99

*Approximately 90 days after planting.

TABLE 6—*Tuber set and size. Average of trials in Tompkins, Steuben and Wyoming counties over 7 years (1997-2003) at 18- to 23-cm spacing.*

Variety	No. tubers per 30 cm of row	Tuber mass (g)
Marcy	8.5	177
Atlantic	8.0	167
Snowden	10.4	133

TABLE 7—*Internal defects in tubers between 8 and 10 cm in size.*

Location	Hollow Heart and Brown Center (%)		Internal Necrosis (%)	
	Marcy	Atlantic	Marcy	Atlantic
New York (40 trials)	6.4	10.7	1.2	6.3
Pennsylvania (27 trials)	7.5	20.3	2.0	7.6

DISEASE RESISTANCE AND OTHER ATTRIBUTES

Marcy has good resistance to common scab. In a scab-infested plot in Ithaca, NY, over 9 years Marcy received an average score of 2.0 compared with 1.7 for 'Superior', 2.8 for Atlantic, and 3.3 for Snowden, where lower scores are considered more resistant (0 = free of scab, 5 = highly susceptible). This variety is also resistant to race Ro1 of the golden nematode. Marcy is moderately susceptible to late blight (trials run by Dr. W. E. Fry in Ithaca). Marcy tested susceptible to potato wart disease in a trial conducted in 1999 in Avondale, Newfoundland, by A. Murphy and S. Wood. It is also susceptible to PVX and PVY and shows typical symptoms for PVY when infected.

In nine evaluations over 4 years, tuber glycoalkaloids of Marcy were found to average 9.1 mg/100 g fresh weight, compared to 6.2 for Atlantic and 12.2 for Snowden. Tuber dormancy is about 2 weeks longer than Atlantic and 1 week longer than Snowden. Vine growth is vigorous, but not a problem for vine kill prior to harvest. The vine does not display symptoms of damage from metribuzin applied at recommended rates at pre-emergence or at the time the vines close the rows.

Plant Variety Protection has been applied for.

ACKNOWLEDGMENTS

The Cornell contributors are members of the Golden Nematode Technical Advisory Committee that includes representatives from USDA-ARS, USDA-APHIS, and New York State Department of Agriculture and Markets. All these agencies provided financial support. Additional support came from growers in New York and Pennsylvania and USDA-CSREES. Regional evaluation was conducted by participants in the NE1014 (formerly NE184) regional research project. We thank Kent Loeffler for photography.

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FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY DIVISION
PLANT VARIETY PROTECTION OFFICE

EXHIBIT C
OBJECTIVE DESCRIPTION OF VARIETY
POTATO (*Solanum tuberosum* L.)

INSTRUCTIONS

The Objective Description Form:
The objective description form lists characteristics to be used as the basis for developing the description of potato varieties. It is designed to guide the applicant in describing a variety in detail so a meaningful comparison with other potato varieties can be accomplished. It is recommended that this form be completed in as much detail as possible to ensure an accurate description. Please fill in the requested data and place the appropriate number that describes the varietal characters typical of this potato variety and the reference varieties in the respective boxes.

Test Guidelines:
Any statistical and trial (field test) data that may be necessary to support the variety description should be attached to this form. Please include for trial data the plot size, number of replications, number of plants, plant spacing, trial locations and growing periods. Trials should normally be conducted at one place, in the region that the variety has been adapted for, with a minimum of one growing period in the United States. All comparative data should be determined from varieties entered in the same trials. The size of the plots should be such that plants or parts of plants may be removed for measuring and counting without prejudice to the observations which must be made at the end of the growing period. As a minimum, each test should include a total of 60 plants which should be divided between two or more replicates. Separate plots for observation and measuring can only be used if they have been subject to similar environmental conditions. To determine color for a plant or plant parts a recognized standard color chart must be used such as the Royal Horticultural Society (R.H.S.) Color Chart.

Reference Varieties:
The application variety should be compared to at least one reference variety preferably a set of reference varieties. The reference varieties should be market class standard varieties currently grown in the United States and or the variety(ies) most similar. The following varieties are recommended as market class standards to be used as reference varieties:

Yellow-flesh table-stock	**Yukon Gold**
Round-white table-stock	**Superior**
Chip-processing	**Atlantic, Snowden, Norchip**
Frozen-processing	**Russet Burbank**
Russet table-stock	**Russet Burbank, Russet Norkotah, Goldrush**
Red table-stock	**Red Pontiac, Red Norland, Red Lasoda**

If the applicant does not use one of the recommended reference varieties the PVP office may not have a complete description for the reference variety used; therefore the applicant may have to supply this description by completing an Exhibit C form for the reference variety.

Characteristics:
The plant type and growth habit characteristics are collected at early first bloom. Figure 1 is supplied to help visualize the growth habit. For this descriptor, look at the stems rather than the stems and foliage. Plant maturity is measured at natural vine senescence.

Stem characteristics are also collected at early bloom. Stem anthocyanin coloration is divided into two descriptors: Location and intensity. Figure 12 is supplied to give an example of stem wings.

Leaf characteristics are observed at early first bloom. Fully-developed leaves located on the middle third of the plant should be used. Leaf pubescence refers to general trichomes. Figure 2 is supplied for examples of leaf silhouette. Figure 3 should be used to describe terminal and primary leaflet shape. Figures 4 and 5 are used to describe the terminal and primary leaflet shape of tip and base, respectively. To measure the total number of primary leaflets pairs, collect 10 fully- developed petioles (with leaves attached from each replication and take the average number of secondary and tertiary leaflets. Figure 11 is supplied to define leaf characteristics. Glandular trichomes should be described through descriptor #12 (Additional Comments and Characteristics). Leaf stipules are shown in figure 13 for visual definition.

Inflorescence characteristics should be measured at early first bloom. Figures 6 and 7 are supplied to describe corolla and anther shape, respectively. Corolla, calyx, anther, stigma and pollen should be observed on newly opened flowers.

Berry production should be based on field-grown plants rather than greenhouse plants.

Tuber characteristics should be observed following harvest. Figures 9 and 10 are available to describe distribution of secondary color and tuber shape, respectively.

Disease and pest reactions should be based upon specific tests rather than field observations. Other diseases or pests reactions not requested can be described if it is felt that it would be helpful to the description.

Quality characteristics should be described according to the market use.

If the plant is transgenic, this gene insertion(s) should be described.

Chemical identification and any other characteristics can be describe if they are helpful in distinguishing the variety.

A rating system of 1-9 provides a scale for describing most characteristics in this form. Characteristic may be rated with intermediate values where the characteristic grades gradually from one extreme to another. For example, if the character states are described as: 3 = Small; 5 = Medium; 7 = Large; the other values of 1, 2, 4, 6, 8, or 9 may be selected.

Legend:

V = Application Variety

R1-R4 = Reference Varieties

* = Both the reference variety(ies) and application variety must be described for characteristics designated with an asterisk.

NAME OF APPLICANT(S)	FOR OFFICIAL USE ONLY
Cornell University per letter 3-13-2007 LMC 8-28-2007	PVPO NUMBER 200200121
ADDRESS (*Street and No. or R.F.D. No., City, State, and Zip Code*)	VARIETY (V) NAME
New York Agricultural Experiment Station Cornell University - Plant Breeding Dept. Ithaca, NY 14583-1901	'Marcy'
	TEMPORARY OR EXPERIMENTAL DESIGNATION
	NY112 = P7-19

REFERENCE VARIETIES: Enter the reference variety name in the appropriate box

Reference Variety 1 (R1)	Reference Variety 2 (R2)	Reference Variety 3 (R3)	Reference Variety 4 (R4)
Atlantic			

1. MARKET CHARACTERISTICS:

MARKET CLASS:

1 = Yellow-flesh tablestock; 2 = Round-white tablestock; 3 = Chip-processing; 4 = Frozen-processing; 5 = Russet tablestock; 6 = Other_____.

V	R1	R2	R3	R4
3	3			

2. PLANT CHARACTERISTICS:

GROWTH HABIT: *(See figure 1)*

3 = Erect (>45° with ground); 5 = Semi-erect (30-45° with ground); 7 = Spreading.

V	R1	R2	R3	R4
5	5			

TYPE:

1 = Stem (foliage open, stems clearly visible); 2 = Intermediate; 3 = Leaf (Foliage closed, stems hardly visible)

V	R1	R2	R3	R4
2	2			

MATURITY: Days after planting (DAP) at vine senescence

V	R1	R2	R3	R4
125	125			

PLANTING DATE:

V	R1	R2	R3	R4
1 May	1 May			

REGION/AREA:

V	R1	R2	R3	R4
NY	NY			

MATURITY CLASS:
1 = Very Early (<100 DAP); 2 = Early (100-110 DAP); 3 = Mid-season (111-120 DAP); 4 = Late (121-130 DAP); 5 = Very Late (>130 DAP).

V	R1	R2	R3	R4
4	4			

3. STEM CHARACTERISTICS: *Measure at early first bloom*

* **STEM ANTHOCYANIN COLORATION:**
1 = Absent; 3 = Weak; 5 = Medium; 7 = Strong; 9 = Very Strong

V	R1	R2	R3	R4
1	1			

STEM WINGS: *(See figure 12)*
1 = Absent; 3 = Weak; 5 = Medium; 7 = Strong; 9 = Very Strong

V	R1	R2	R3	R4
7	7			

4. LEAF CHARACTERISTICS:

LEAF COLOR: *(Observe fully developed leaves located on middle $^1/_3$ of plant)*
1 = Yellowish-green; 2 = Olive-green; 3 = Medium green; 4 = Dark green; 5 = Grey-green; 6 = Other_____

V	R1	R2	R3	R4
4	3			

LEAF COLOR CHART VALUE: Royal Horticulture Society Color Chart or (Munsell Color Chart)
(Observe fully developed leaves located on middle $^1/_3$ of plant & circle the appropriate color chart)

V	R1	R2	R3	R4
7.5GY V=4 C=6	5GY V=4 C=8			

LEAF PUBESCENCE DENSITY:
1 = Absent; 2 = Sparse; 3 = Medium; 4 = Thick; 5 = Heavy

V	R1	R2	R3	R4
2				

LEAF PUBESCENCE LENGTH:
1 = None; 2 = Short; 3 = Medium; 4 = Long; 5 = Very long

V	R1	R2	R3	R4
3				

(Note: Descriptor #19 can be used to describe the type and length of the glandular trichomes observed.)

* **LEAF SILHOUETTE:** *(See figure 2)*
1 = Closed; 3 = Medium; 5 = Open

V	R1	R2	R3	R4
5	3			

PETIOLES ANTHOCYANIN COLORATION:
1 = Absent; 3 = Weak; 5 = Medium; 7 = Strong; 9 = Very Strong

V	R1	R2	R3	R4
1	1			

LEAF STIPULES SIZE: *(See figure 13)*
1 = Absent; 3 = Small; 5 = Medium; 7 = Large

V	R1	R2	R3	R4
3	3			

TERMINAL LEAFLET SHAPE: *(See figure 3 & 11)*
1 = Narrowly ovate; 2 = Medium ovate; 3 = Broadly ovate; 4 = Lanceolate; 5 = Elliptical;
6= Obovate; 7 = Oblong; 8 = Other_____

V	R1	R2	R3	R4
2	2			

TERMINAL LEAFLET TIP SHAPE: *(See figure 4 & 11)*
1 = Acute; 2 = Cuspidate; 3 = Acuminate; 4 = Obtuse; 5 = Other_____

V	R1	R2	R3	R4
3	3			

* **TERMINAL LEAFLET BASE SHAPE:** *(See figure 5 & 11)*
1 = Cuneate; 2 = Acute; 3 = Obtuse; 4 = Cordate; 5 = Truncate; 6 = Lobed; 7 = Other_____

V	R1	R2	R3	R4
4	4			

* **TERMINAL LEAFLET MARGIN WAVINESS:**
1 = Absent; 2 = Slight; 3 = Weak; 4 = Medium; 5 = Strong

V	R1	R2	R3	R4
1	1			

NUMBER OF PRIMARY LEAFLET PAIRS: *(See figure 11)*

AVERAGE:

V	R1	R2	R3	R4
3.8	3.6			

RANGE:

V	R1	R2	R3	R4
3 to 4	3 to 4	to	to	to

PRIMARY LEAFLET TIP SHAPE: *(See figure 4 & 11)*
1 = Acute; 2 = Cuspidate; 3 = Acuminate; 4 = Obtuse; 5 = Other_____

V	R1	R2	R3	R4
3	3			

* **PRIMARY LEAFLET SIZE:**

1 = Very Small; 2 = Small; 3 = Medium; 4 = Large; 5 = Very Large

V	R1	R2	R3	R4
4	4			

PRIMARY LEAFLET SHAPE: *(See figure 3 & 11)*

1 = Narrowly ovate; 2 = Medium ovate; 3 = Broadly ovate; 4 = Lanceolate; 5 = Elliptical; 6= Obovate; 7 = Oblong; 8 = Other_____

V	R1	R2	R3	R4
5	5			

PRIMARY LEAFLET BASE SHAPE: *(See figure 5 & 11)*

1 = Cuneate; 2 = Acute; 3 = Obtuse; 4 = Cordate; 5 = Truncate; 6 = Lobed; 7 = Other_____

V	R1	R2	R3	R4
4	6			

NUMBER OF SECONDARY AND TERTIARY LEAFLET PAIRS: *(See figure 11)*

AVERAGE:

V	R1	R2	R3	R4
6.6	5.8			

RANGE:

V	R1	R2	R3	R4
4 to 9	2 to 9	to	to	to

5. INFLORESCENCE CHARACTERISTICS:

NUMBER OF INFLORESCENCE / PLANT:

AVERAGE:

V	R1	R2	R3	R4
6	6			

RANGE:

V	R1	R2	R3	R4
4 to 9	3 to 8	to	to	to

NUMBER OF FLORETS / INFLORESCENCE:

AVERAGE:

V	R1	R2	R3	R4
12	14			

RANGE:

V	R1	R2	R3	R4
10 to 14	9 to 24	to	to	to

* **COROLLA INNER SURFACE COLOR CHART VALUE:** Royal Horticulture Society Color Chart or Munsell Color Chart

(Measure predominant color of newly open flower & circle the appropriate color chart)

V	R1	R2	R3	R4
White 155A	Violet 85C			

* **COROLLA OUTER SURFACE COLOR CHART VALUE:** **Royal Horticulture Society Color Chart** or **Munsell Color Chart**

(Measure predominant color of newly open flower & circle the appropriate color chart)

V	White 155A	**R1**	violet 85C	**R2**		**R3**		**R4**	

* **COROLLA INNER SURFACE COLOR:** *(Measure predominant color of newly open flower)*
1 = White; 2 = Red-violet; 3 = Blue-violet; 4 = Other_____

V	R1	R2	R3	R4
1	2			

COROLLA SHAPE: *(See figure 6)*
1 = Very rotate; 2 = Rotate; 3 = Pentagonal; 4 = Semi-stellate; 5 = Stellate

V	R1	R2	R3	R4
3	3			

CALYX ANTHOCYANIN COLORATION:
1 = Absent; 3 = Weak; 5 = Medium; 7 = Strong; 9 = Very strong

V	R1	R2	R3	R4
1	3			

ANTHER COLOR CHART VALUE: (Royal Horticulture Society Color Chart) or Munsell Color Chart
(Measure when newly opened flower is fully expanded and circle the appropriate color chart)

V	R1	R2	R3	R4
17A yellow-orange	14A yellow-orange			

ANTHER SHAPE: *(See figure 7)*
1 = Broad cone; 2 = Narrow cone; 3 = Pear shape cone; 4 = Loose; 5 = Other_____

V	R1	R2	R3	R4
1	1			

POLLEN PRODUCTION:
1 = None; 3 = Some; 5 = Abundant

V	R1	R2	R3	R4
5	3			

STIGMA SHAPE: *(See figure 8)*
1 = Capitate; 2 = Clavate; 3 = Bi-lobed

V	R1	R2	R3	R4
1	1			

STIGMA COLOR CHART VALUE: (Royal Horticulture Society Color Chart) or Munsell Color Chart
(Circle the appropriate color chart)

V	R1	R2	R3	R4
152A yellow-green	146A yellow-green			

BERRY PRODUCTION: *(Under field conditions)*
1 = None; 3 = Low; 5 = Moderate; 7 = Heavy; 9 = Very heavy

V	R1	R2	R3	R4
1	3			

5. TUBER CHARACTERISTICS:

* **PREDOMINANT SKIN COLOR:**

1 = White; 2 = Light Yellow; 3 = Yellow; 4 = Buff; 5 = Tan; 6 = Brown; 7 = Pink; 8 = Red; 9 = Purplish-red; 10 = Purple; 11 = Dark purple-black; 12 = Other_____

V	R1	R2	R3	R4
6	6			

PREDOMINANT SKIN COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart
(Circle the appropriate color chart)

V	R1	R2	R3	R4
2.5Y V=6 C=6	2.5Y V=6 C=6			

SECONDARY SKIN COLOR:

1 = Absent; 2 = Present, please describe: _____

V	R1	R2	R3	R4
1	1			

SECONDARY SKIN COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart
(Circle the appropriate color)

V	R1	R2	R3	R4
N/A	N/A			

SECONDARY SKIN COLOR DISTRIBUTION:

1 = Eyes; 2 = Eyebrows; 3 = Splashed; 4 = Scattered; 5 = Spectacled; 6 = Stippled; 7 = Other_____

V	R1	R2	R3	R4
N/A	N/A			

SKIN TEXTURE:

1 = Smooth; 2 = Rough (flaky); 3 = Netted; 4 = Russetted; 5 = Heavily russetted; 6 = Other_____

V	R1	R2	R3	R4
2	2			

* **TUBER SHAPE:** *(See figure 10)*

1 = Compressed; 2 = Round; 3 = Oval; 4 = Oblong; 5 = Long; 6 = Other_____

V	R1	R2	R3	R4
3	2			

TUBER THICKNESS:

1 = Round; 2 = Medium thick; 3 = Slightly flattened; 4 = Flattened; 5 = Other_____

V	R1	R2	R3	R4
3	3			

TUBER LENGTH (mm):

AVERAGE:

V	63	R1		R2		R3		R4	

RANGE:

V	36 to 112	R1	to	R2	to	R3	to	R4	to

STANDARD DEVIATION:

V	13	R1		R2		R3		R4	

AVERAGE WEIGHT OF SAMPLE TAKEN:

V		R1		R2		R3		R4	

TUBER WIDTH (mm):

AVERAGE:

V	55	R1		R2		R3		R4	

RANGE:

V	33 to 82	R1	to	R2	to	R3	to	R4	to

STANDARD DEVIATION:

V	12.5	R1		R2		R3		R4	

AVERAGE WEIGHT OF SAMPLE TAKEN:

V		R1		R2		R3		R4	

TUBER THICKNESS (mm):

AVERAGE:

V	47	R1		R2		R3		R4	

RANGE:

V	29 to 70	R1	to	R2	to	R3	to	R4	to

STANDARD DEVIATION:

V	8.0	R1		R2		R3		R4	

AVERAGE WEIGHT OF SAMPLE TAKEN:

V		R1		R2		R3		R4	

TUBER EYE DEPTH:

1 = Protruding; 2 = Shallow; 3 = Intermediate; 4 = Deep; 5 = Very deep

V	2	R1	3	R2		R3		R4	

TUBER LATERAL EYES
1 = Protruding; 2 = Shallow; 3 = Intermediate; 4 = Deep; 5 = Very deep

V	R1	R2	R3	R4
2	3			

NUMBER EYE / TUBER:

AVERAGE:

V	R1	R2	R3	R4
9.0				

RANGE:

V	R1	R2	R3	R4
7 to 12	to	to	to	to

DISTRIBUTION OF TUBER EYES:
1 = Predominantly apical; 2 = Evenly distributed

V	R1	R2	R3	R4
1	1			

PROMINENCE OF TUBER EYEBROWS:
1 = Not prominent; 2 = Slight prominence; 3 = Medium prominence; 4 = Very prominent; 5 = Other_____

V	R1	R2	R3	R4
1	1			

* **PRIMARY TUBER FLESH COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart**
(Circle the appropriate color chart)

V	R1	R2	R3	R4
White 158B	White 158B			

per letter 3-13-2007
LMC 8-28-2007

SECONDARY TUBER FLESH COLOR:
1 = Absent; 2 = Present, please describe: _____

V	R1	R2	R3	R4
1	1			

SECONDARY TUBER FLESH COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart
(Circle the appropriate color chart)

V	R1	R2	R3	R4
—	—			

NUMBER OF TUBERS / PLANT:
1 = Low (<8); 2 = Medium (8 -15); 3 = High (>15)

V	R1	R2	R3	R4
1	1			

6. DISEASES CHARACTERISTICS:

DISEASES REACTION: 0 = NOT TESTED; 1 = RESISTANT; 3 = MODERATELY RESISTANT; 5 = MODERATELY SUSCEPTIBLE; 7=SUSCEPTIBLE; 9=HIGHLY SUSCEPTIBLE

	V	R1	R2	R3	R4
BACTERIAL RING ROT, FOLIAR REACTION:	0				
BACTERIAL RING ROT, TUBER REACTION:	0				
LATE BLIGHT:	7	7			
PLRV (LEAF ROLL):	0				
PVX:	0				
PVY:	0				
OTHER: COMMON SCAB	3	5			
OTHER:					

7. PESTS CHARACTERISTICS:

PEST REACTION: 0 = NOT TESTED; 1 = RESISTANT; 3 = MODERATELY RESISTANT; 5 = MODERATELY SUSCEPTIBLE; 7=SUSCEPTIBLE; 9=HIGHLY SUSCEPTIBLE

	V	R1	R2	R3	R4
GOLDEN NEMATODE:	1	1			
OTHER:					

8. GENE TRAITS:

INSERTION OF GENES: ☐ YES ☒ NO

If YES, describe the gene(s) introduced or attach information:

200200121

9. QUALITY CHARACTERISTICS:

CHIEF MARKET:

CHIP - PROCESSING

SPECIFIC GRAVITY (wt. air /wt. air - wt. water)
1 < 1.060; 2 = 1.060-1.069; 3 = 1.070-1.079; 4 = 1.080-1.089; 5 > 1.090

Average specific gravity is 0.008 less than Atlantic

V	4	R1	5	R2		R3		R4	

TOTAL GLYCOALKALOID CONTENT (mg. / 100 g. fresh tuber)

V	9	R1	5	R2		R3		R4	

OTHER QUALITY CHARACTERISTICS: Describe any other quality characteristics that may aid in identification, (e.g. chip-processing, french fry processing, baking, boiling, after-cooking darkening). Please attach data and corresponding protocol.

11. CHEMICAL IDENTIFICATION:

Describe chemical traits of the candidate variety that aid in its identification (e.g. protein or DNA electrophoresis). Please attach data and the corresponding protocol.

12. ADDITIONAL COMMENTS AND CHARACTERISTICS:

Include any additional descriptors that would be useful in distinguishing the candidate variety.

Outstanding yield - averages 120% of Atlantic in upstate New York.

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
Cornell University	NY112 = P7-19	Marcy

ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country)

New York Agricultural Experiment Station
Cornell University – Dept of Plant Breeding + Genetics
Ithaca NY 14853-1901

FOR OFFICIAL USE ONLY

PVPO NUMBER

#200200121

REFERENCE VARIETIES: Enter the reference variety name in the appropriate box.

Application Variety (V)	Reference Variety 1 (R1)	Reference Variety 2 (R2)	Reference Variety 3 (R3)	Reference Variety 4 (R4)
Marcy	Atlantic			

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

1. MARKET CHARACTERISTICS:

***MARKET CLASS:**
1 = Yellow-flesh Tablestock 2 = Round-white Tablestock 3 = Chip-processing 4 = Frozen-processing
5 = Russet Tablestock 6 = Other _____

V		R1		R2		R3		R4	

2. LIGHT SPROUT CHARACTERISTICS: (See Figure 1)

***LIGHT SPROUT: GENERAL SHAPE**
1 = Spherical 2 = Ovoid 3 = Conica 4 = Broad cylindrica 5 = Narrow cylindrical 6 = Other _____

V	4	R1	4	R2		R3		R4	

***LIGHT SPROUT BASE: PUBESCENCE OF TIP**
1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	4	R1	4	R2		R3		R4	

***LIGHT SPROUT BASE: ANTHOCYANIN COLORATION**
1 = Green 2 = Red-violet 3 = Blue-violet 4 = Other(describe) _____

V	2	R1	2	R2		R3		R4	

***LIGHT SPROUT BASE: INTENSITY OF ANTHOCYANIN COLORATION (IF PRESENT)**
1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	3	R1	5	R2		R3		R4	

***LIGHT SPROUT TIP: HABIT**
1 = Closed 2 = Intermediate 3 = Open

V	1	R1	1	R2		R3		R4	

2. LIGHT SPROUT CHARACTERISTICS: (continued)

LIGHT SPROUT TIP: PUBESCENCE
1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	R1	R2	R3	R4
1	2			

LIGHT SPROUT TIP ANTHOCYANIN COLORATION
1 = Green 2 = Red-violet 3 = Blue-violet 4 = Other(describe) _____

V	R1	R2	R3	R4
1	1			

LIGHT SPROUT TIP: INTENSITY OF ANTHOCANIN COLORATION (IF PRESENT)
1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	R1	R2	R3	R4
1	1			

LIGHT SPROUT ROOT INITIALS: FREQUENCY
1 = Short 2 = Medium 3 = Long

V	R1	R2	R3	R4
2	2			

3. PLANT CHARACTERISTICS:

GROWTH HABIT: (See Figure 2)
3 = Erect (>45° with ground) 5 = Semi-erect (30-45° with ground) 7 = Spreading

V	R1	R2	R3	R4

TYPE:
1 = Stem (foliage open, stems clearly visible) 2 = Intermediate 3 = Leaf (Foliage closed, stems hardly visible)

V	R1	R2	R3	R4

MATURITY: Days after planting (DAP) at vine senescence

V	R1	R2	R3	R4

PLANTING DATE:

V	R1	R2	R3	R4

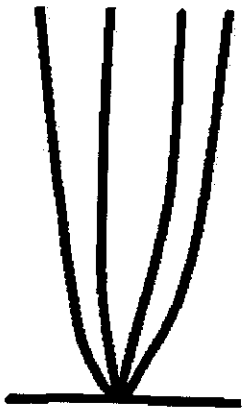
*REGIONAL AREA:
1 = Pacific North West (WA, OR, ID, CO, CA) 2 = North Central (ND, WI, MI, MN, OH) 3 = North East (ME, NY, PA, NJ, MD, MA, RI,)
4 = Mid-Atlantic Erect (VI, NC, SC, South NJ, FL) 5 = South (LA, TX, AZ, NE) 6 = Canada
7 = Europe 8 = England 9 = Latin America 10 = Brazil 11 = Other _____

V	R1	R2	R3	R4

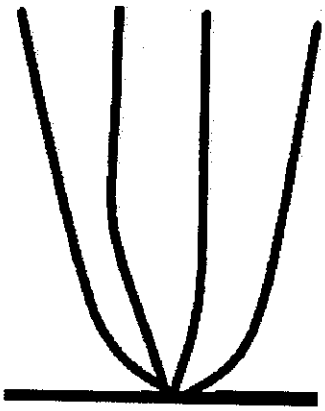
MATURITY CLASS:
1 = Very Early (<100 DAP) 2 = Early (100-110 DAP) 3 = Mid-season (111-120 DAP) 4 = Late (121-130 DAP) 5 = Very Late (>130 DAP).

V	R1	R2	R3	R4

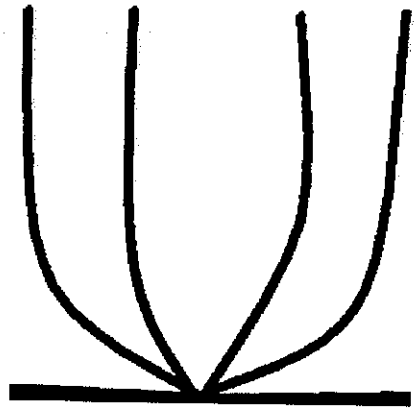
Figure 1: Growth Habit



3 = Erect
$>45^0$ with ground

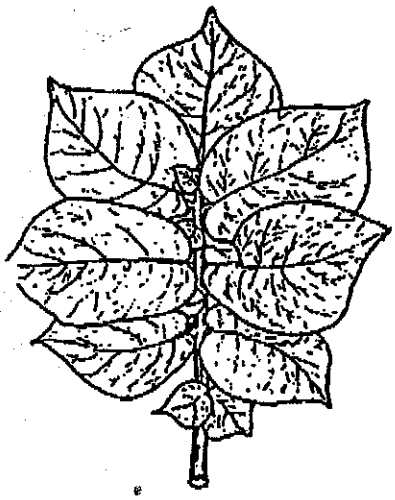


5 = Semi-erect
30-45^0 with ground

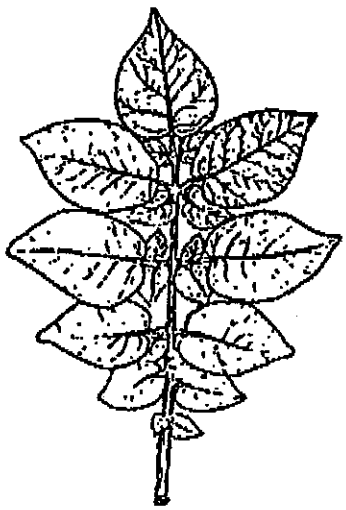


7 = Spreading
$<30^0$ with ground

Figure 2: Leaf Silhouette



1 = Closed

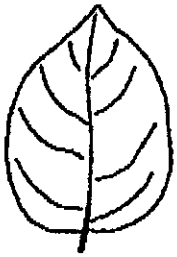


3 = Medium

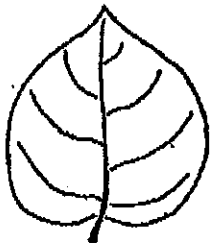
5 = Open

Figure 3: Terminal Leaflet Shape / Primary Leaflet Shape

1=Narrowly Ovate



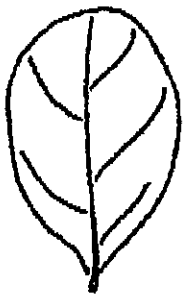
2=Medium Ovate



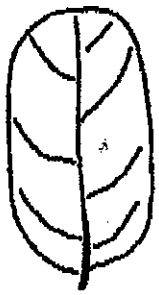
3=Broadly Ovate

4=Lanceolate

5=Elliptical



6=Obovate



7=Oblong

Figure 4: Terminal Leaflet Shape of Tip / Primary Leaflet Shape of Tip

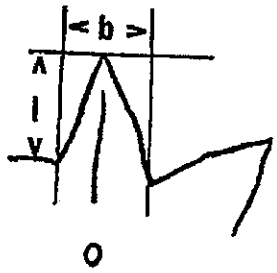
1=Acute 2=Cuspidate 3=Acuminate 4=Obtuse

Figure 5: Terminal Leaflet Shape of Base / Primary Leaflet Shape of Base

1=Cuneate 2=Acute 3=Obtuse

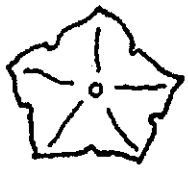
4=Cordate 5=Truncate 6=Lobed

Figure 6: Corolla Shape

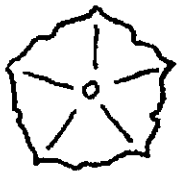


stellate
l > b

semi-stellate
l = b



pentagonal
l < b



rotate
l << b

very rotate
l <<< b

Figure 7: Anther Shape

1=Broad cone

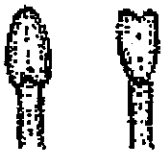
2=Narrow cone

3=Pear shape cone

4=Loose

Figure 8: Stigma Shape

1=Capitate

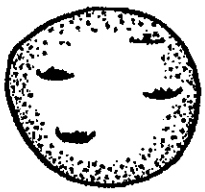


2=Clavate

3=Bilobed

Figure 9: Distribution of Secondary Tuber Color

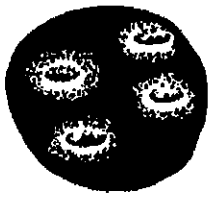
1=Eyes



2=Eyebrows

3=Splashed

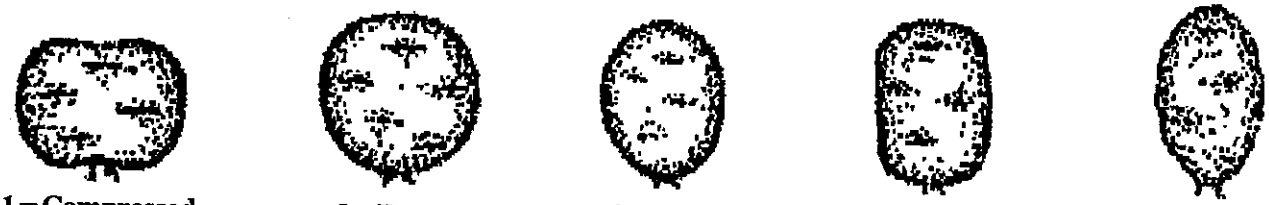
4=Scattered



5=Spectacled

6=Stippled

Figure 10: Tuber Shape



1=Compressed 2=Round 3=Oval 4=Oblong 5=Long

Figure 11: Leaf Dissection

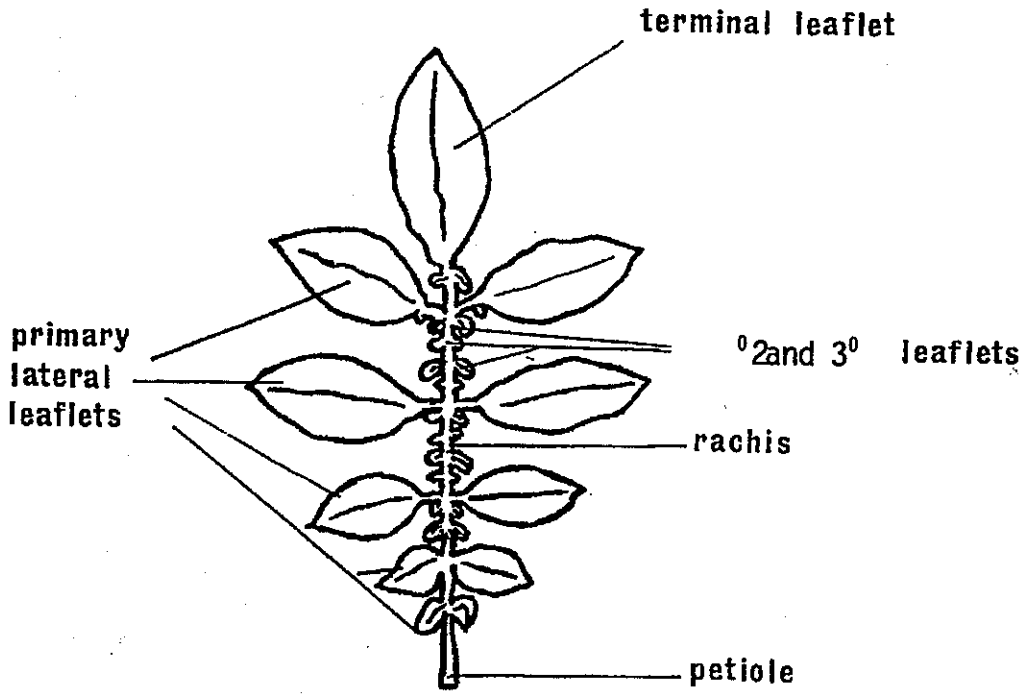


Figure: 12 Stem Wings

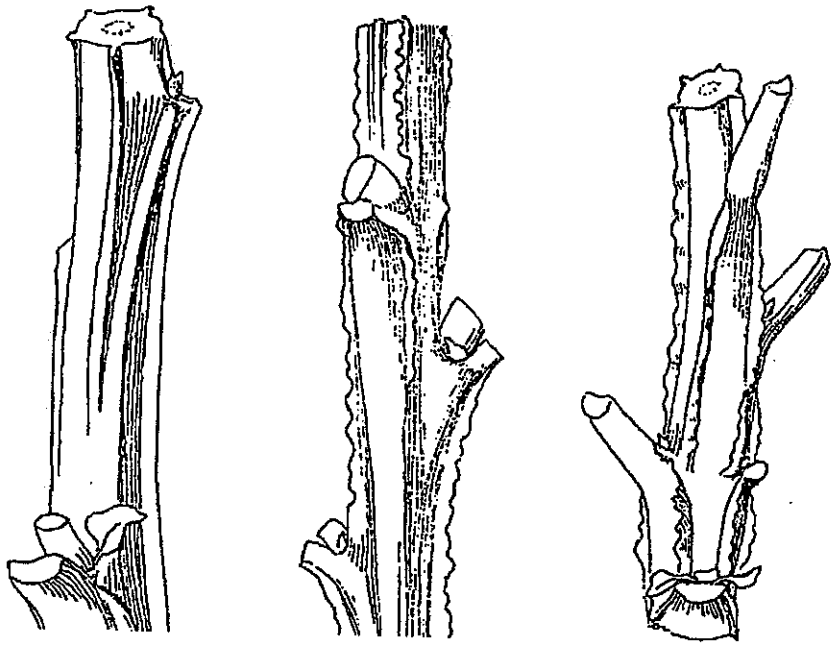
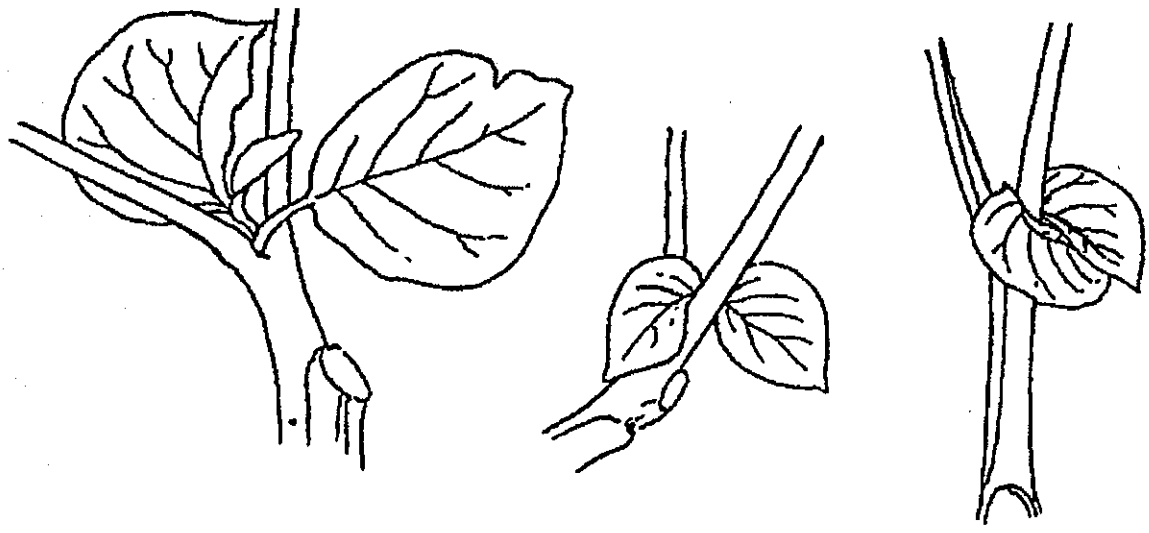


Figure 13: Leaf Stipules:



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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued *(7 U.S.C. 2421)*. The information is held confidential until the certificate is issued *(7 U.S.C. 2426)*.

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Cornell University	NY112 = P7-19	Marcy
4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*	**5. TELEPHONE** *(Include area code)*	**6. FAX** *(Include area code)*
New York Agricultural Experiment Station Cornell University - Dept of Plant Breeding and Genetics Ithaca NY 14853-1901	(607) 255-2180	(607) 255-6683
	7. PVPO NUMBER #200200121	

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. **If no, please explain.** ☑ **YES** ☐ **NO**

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? **If no, give name of country.** ☑ **YES** ☐ **NO**

10. Is the applicant the original owner? ☑ **YES** ☐ **NO** **If no, please answer one of the following:**

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?
☐ **YES** ☐ **NO** **If no, give name of country**

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?
☐ **YES** ☐ **NO** **If no, give name of country**

11. Additional explanation on ownership *(Trace ownership from original breeder to current owner. Use the reverse for extra space if needed)*:

The breeders of the potato variety "Marcy" (prior experimental designations NY112 and P7-19) are Robert L Plaisted and Walter S De Jong. The breeding was performed at Cornell University, Ithaca, NY. Both individuals were employed as potato breeders by Cornell, in the Department of Plant Breeding, and performed the breeding in the course of their professional responsibilities. Cornell University is thus the sole owner of the variety.

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT F
DECLARATION REGARDING DEPOSIT

NAME OF OWNER (S)	ADDRESS *(Street and No. or RD No., City, State, and Zip Code and Country)*	TEMPORARY OR EXPERIMENTAL DESIGNATION
Cornell University	New York Agricultural Experment Station, Cornell University, Dept of Plant Breeding and Genetics, Ithaca, NY, 14853-1901, USA	NY112 = P7-19
		VARIETY NAME Marcy
NAME OF OWNER REPRESENTATIVE (S)	**ADDRESS** *(Street and No. or RD No., City, State, and Zip Code and Country)*	FOR OFFICIAL USE ONLY
Walter S De Jong	New York Agricultural Experment Station, Cornell University, Dept of Plant Breeding and Genetics, Ithaca, NY, 14853-1901, USA	**PVPO NUMBER** #200200121

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.

Signature

13 March 2007
Date

Walter S DeJong

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